Environmental Design Program

Dept. of Natural Resources
John R. Griffin, Secretary

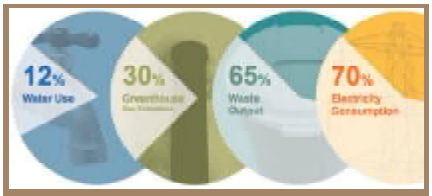
White Paper: The Case for Environmental Design

Why Environmental Design?

- **Leadership by Example**
- **Cost-Containment** for Rising Energy Prices & Shrinking Budgets
- **Resource Conservation:** *Energy, Water, & Waste*
- **Human Impacts:** *Indoor Air Quality, Worker Productivity, and Student Performance*
- **Maryland's Future:** *Regional Economy, Carbon Emissions, and Climate Change*

Environmental Design In Context

Impacts from the more than 16 million people in the Chesapeake Bay watershed clearly affect our natural resources, our economy, and our future. From increasing energy costs to falling water supplies to tighter budgets, our day-to-day activities are reaching levels where resources are challenged to recover. No other issue better showcases these mounting pressures than the way we build. Environmental design (ED) aims to "re-naturalize" our built environment by recognizing development as a micro-ecosystem.



Building impacts nationwide (source: USGBC)

The tenets of ED run parallel with other related statewide initiatives. Passed in 2006, HB1141 requires governments to address water resources. This year, proposed legislation such as the Clean Cars Act and the Global Warming Bill recognize the need to reduce carbon emissions. Since buildings contribute 1/3 of CO_2 emissions, leaving them 'off the table' cannot be an option.

Fiscal Responsibility

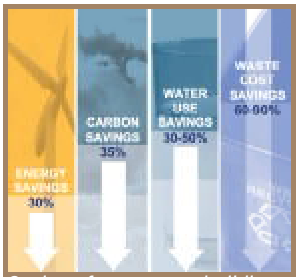
A common misunderstanding is that building green costs more than traditional facilities. In reality, green buildings can be designed and constructed within traditional budgets, and tenants enjoy considerable long-term savings on operation and maintenance costs. The key fact is that **the initial design and construction of a building is only 2% of its life-cycle cost.** That means, every $1 million spent in design and construction equals $50 million over its life-span. Further, nationwide studies estimate increased premiums, if any, at around 2%. As Montgomery County argues, they can **no longer afford NOT to build green**.

The Pennsylvania Department of Environmental Protection's Cambria Office is an excellent case study of green design principles in action. The facility was designed and constructed for $93 sq/ft, while average area construction costs were between $85-$100 sq/ft. The DEP was able to accomplish this by ensuring all stakeholders were present during design, appreciating the life-cycle costs of the components, and by recognizing how all building systems interact.


Pennsylvania's Dept. of Environmental Protection's Cambria Office Building was built at market cost and saves 57% on its energy costs!

Lower Costs, Less Pollution

The hallmark of high performance buildings is their resource efficiency. First, relating to energy, the DEP building is **saving taxpayers 57% of the energy costs** of traditional energy expenditures. Rising energy costs are putting Maryland and local budgets in dire straights. At about $1 million and increasing, Maryland State Parks' energy budget serves as a good example, requiring techniques for cost containment. Second, by using techniques like waterless urinals, hand-activated faucets, and Bay Scaping, green buildings **dramatically cut water use**.



Savings from green buildings (source: USGBC)

The LEED-Platinum Rated Chesapeake Bay Foundation building in Annapolis **saves more than 90% of water** than comparable facilities. Lastly, and of great concern to local governments, is that more than **40% of landfills is construction waste**. Green construction relies on reusing and recycling materials to redirect the waste stream.

Human Health and Student Learning

We are inside some form of building more than 90% of our day! Products such as carpeting, paints, and sealants release, or 'off-gas', chemicals that affect our health. Green buildings put a premium on healthy indoor air quality. Accordingly, healthy buildings also reduce employee-related expenditures. Studies suggest owners of high-performance facilities enjoy more productive workers, lower absenteeism, lower lawsuit and insurance claims, and reduced liability. The West Bend Mutual Insurance Company in Wisconsin documented a 16%

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productivity gain as a result of their green building, which translates into **savings of more than $2 million a year**.

The same health benefits enjoyed by commercial buildings can also be enjoyed by our children. Recent studies concluded students in schools with daylighting and better indoor air quality attended school more often, were healthier, enjoyed better moods, and, most importantly, **enjoyed higher test scores** than those in less healthy facilities. In addition, many school systems use the building itself as a critical teaching component in their curriculum.

Green education centers provide students with healthy learning facilities and a 'living classroom'.

Green Buildings Certification

In the US, the dominant certification program is the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED). The federal government, seventeen states, and no less than 61 local governments use LEED as the green building standard. Through consensus, the USGBC developed a rating system based on points with increasing levels of Certified, Silver, Gold, and Platinum ratings. The strength of LEED centers on few pre-requirements, such as certification and commissioning (post-construction diagnostic), which allows great flexibility in achieving LEED certification. In addition, members of the development community can become a LEED Accredited Professional (AP). Currently, LEED APs number more than 35,000 nationwide.

An alternative to LEED is the Green Building Initiative's Green Globes Program. Developed in Canada, the Program came to the US in 2004. Green Globes is a questionnaire-based, online system that is targeted to beginners in the green building field, as well as professionals. Like LEED, Green Globes uses a rating system based on points with levels ranging from one to four 'Globes'. Elements such as third-party certification and commissioning, though, are optional. Currently, Maryland and Arkansas specifically recognize Green Globes, along with LEED, as a green building standard.

"The innovative proposal from DGS caused us to embrace numerous green building technologies and view our business in a new light. Many of these systems make good business sense independent of whether your project is a green building."

Sam Himmelrich, Developer of Montgomery Park, Home of the MD Department of the Environment

Brief History

The major catalyst for much of Maryland's action on green building was an Executive Order signed by then-Governor Glendening in 2001. Addressing many topics, the main outcome was the creation of the **Maryland Green Building Council** that mandated all state facilities to be built to LEED-Silver. This action was supported by annual reports submitted to the Governor and legislature until 2003, at which time the Council stopped meeting.

The following year, the General Assembly passed the Green Building Tax Credit that provides developers with an 8% tax credit of construction costs if the facility meets LEED-Silver. This program has proven so successful that the **$25 million were fully allocated six years ahead of schedule**. Legislation is currently pending to reallocate funding. In addition, no less than four bills are being considered by the General Assembly that address green buildings.

Since 2003, state and local governments throughout the region are now leading the charge. In November, both Montgomery County and Washington, DC passed legislation mandating commercial facilities be built to LEED-Silver standards. Baltimore City concluded its Green Building Task Force, and Baltimore County passed its own green building tax credit. As for state governments, Pennsylvania, New Jersey, and Delaware adopted initiatives and policies that promote and institute green buildings.

Sustainable Maryland: The Future of ED

The true potential of environmental design is its focus on the nexus of economic vitality, social equity, and environmental protection. On the site scale, implementing ED techniques saves money and resources for governments and the private sector alike. On a regional basis, ED promotes new industries and encourages truly sustainable options. The Maryland Green Building Council was a key institution in implementing the foundations of sustainability. By returning to its charge, **Maryland can again lead by example** and design a sustainable community for all its residents.

Recommendations

- **Reconvene MD Green Building Council or Similar Sustainability Body or Office**
- **Conduct Resource Audit to Measure Resource Use, Total Expenditures, and Potential Savings**
- **Lead by Example: *Require state facilities and grounds to implement ED principles***
- **Publicize Resource Conservation Efforts and Track Actual Cost, Use, and Pollution Savings**